
Family physicians' interests in special features of electronic publication

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Objective: Because many of the medical journals read by family physicians now have an electronic version, the authors conducted a survey to determine the interest of family physicians in specific features of electronic journal publications.

Setting and Participants: We surveyed 175 family physicians randomly selected from the American Academy of Family Physicians.

Results: The response rate was 63%. About half of family physicians reported good to excellent computer proficiency, and about one quarter used online journals sometimes or often. Many respondents reported high interest in having links to: an electronic medical text (48% for original articles, 56% for review articles), articles' list of references (52% for original articles, 56% for review articles), and health-related Websites (48% for original and review articles).

Conclusion: Primary care-oriented journals should consider the interests of family physicians when developing and offering electronic features for their readers.

INTRODUCTION

With the advent of the electronic information age, family physicians have seen a tremendous growth in the number of general medical journals that offer an electronic version. These journals offer a variety of special electronic features that are intended to enhance the usefulness of journal content for busy practitioners. For example, online journals may offer subscribers an advanced and customized notification of content and sophisticated literature searching capabilities [1–4]. As physicians become more avid users of electronic journals [5], they are likely to want access to those electronic publication features that will be most useful to them. Certainly with the proliferation of Internet connections and technologies and improved computer access and speeds, the potential exists for online journals to serve as the ideal interface of medical information in the future. Therefore, it becomes important to assess family physicians' information needs in this new multimedia-based health care environment.

This study sought to determine the interests of family physicians in selected features that could accompany electronic publication of a medical journal and to identify barriers that may prevent family physicians from using electronic journals.

METHOD

The authors conducted a cross-sectional survey of family physicians that was initiated in December 2000 and completed in March 2001. We surveyed a total of 175 family physicians randomly selected from the American Academy of Family Physicians (AAFP). We targeted members of the AAFP, because the AAFP is the largest organization of family physicians in the United States [6]. We asked the membership coordinator of the AAFP to randomly select from the membership list 175 individuals who were active members, currently practicing in the United States, and graduates of U.S. medical schools.

As described in a previous publication about a similar survey of academic general internists and family physicians, the survey instrument was developed and piloted among primary care physicians at the Johns Hopkins University School of Medicine. We also obtained input from the editors of selected primary care-oriented journals for the development of the questionnaire and incorporated some of the items they suggested. The instrument included questions about the respondent's use of online journals and the level of interest in having the following electronic features linked to an original article, review article, or editorial: links to article references, links to health-related Websites or an electronic medical text, links to appendices and supportive material, links to peer reviewers' comments, and links to communicate with editors, authors, or other readers [7]. The questions assessing interest in specific electronic features used a 4-point Likert scale consisting of "no interest," "little interest," "moderate interest," and "high interest." The survey

Table 1
Characteristics of survey respondents

Family physicians (N = 110)	Number	Percent
Male	80	74
Graduated after 1983	55	51
Use of online journals (sometimes or often)	33	31
Primary work activity		
Patient care	95	86
Teaching	4	3
Research	0	< 1
Administration	10	9
Faculty appointment (part-time or full-time)	28	25
Regularly read medical journals (often or always)		
Original articles	23	21
Reviews	56	52
Editorials	15	13
Computer proficiency (rated good or excellent)	60	55
Internet access		
Home	95	87
Work	80	74

also included questions regarding interest in receiving customized alerts and advance tables of contents and queries regarding potential barriers to use of the online version of a journal. We also collected information about age at graduation from medical school, specialty type, faculty appointment, primary work activity, computer proficiency, and availability of Internet access.

We mailed questionnaires to the selected family physicians with a cover letter explaining the purpose of the study. The study protocol was approved by the Johns Hopkins University Joint Committee on Clinical Investigation.

Descriptive statistics were used to summarize characteristics of responding physicians and their survey responses. We used the chi-square test to assess the relationship of computer proficiency to online journal use and barriers. Analyses were performed using STATA Statistical Software version 6 (Houston, TX).

RESULTS

After three mailings, the response rate reached 63% (110 of 175 members). Overall, 68% of respondents were men, and 50% graduated from medical school after 1983.

The baseline characteristics of respondents in our sample (Table 1) appeared to be representative of the AAFP membership. According to a membership survey of the AAFP, 72% of active members were men, 38% had a faculty appointment, and 98% were involved in direct patient care [8].

Of interest, among those physicians who had rarely or never used an online publication, respondents were more likely to report that they had never used an online journal if their computer proficiency was poor or fair (75%) compared to good or excellent (25%) ($P < 0.05$).

Table 2

Interest in electronic features for original, review, and editorial articles

Moderate or high interest in having an electronic link to	Family physicians (N = 110)	
	Number	Percent
Original		
Electronic medical text	51	48
Health-related Website	52	48
Article's list of references	57	52
Peer reviewers' comments	38	36
Forward an article to a colleague	47	44
Appendixes and supportive material	29	27
Communicate comments to author or editor	26	21
Initiate dialog with other readers	13	12
Review		
Electronic medical text	59	56
Health-related Website	50	48
Article's list of references	59	56
Forward an article to a colleague	45	43
Peer reviewers' comments	31	29
Appendixes and supportive material	31	29
Communicate comments to author or editor	21	20
Initiate dialog with other readers	12	11
Editorials		
Article's list of references	59	56
Forward an article to a colleague	34	32
Communicate comments to author or editor	21	20
Initiate dialog with other readers	12	11
Advance table of contents	40	39
Customized alerts	42	41

Interest in specific electronic features

Participants reported high interest in having links to an electronic medical text, health-related Websites, and an article's list of references (Table 2). They reported low interest in having links to initiate dialog with other readers and communicating comments to authors or editors. They also reported moderate to high interest in receiving advance tables of contents and customized alerts.

Barriers

As shown in Table 3, the majority of respondents reported that the inability to read the journal anywhere and preference for print media were barriers to the use of electronic features. The inability to read the journal anywhere was considered to be a major barrier by 60% of family physicians with low computer proficiency but only by 40% with high computer proficiency. Similarly, preference for print media was felt to be a major barrier by 58% of family physicians with low computer proficiency but by only 41% with high computer proficiency.

DISCUSSION

Family physicians are interested in specific features of electronic publications that will enhance the usefulness of primary care-oriented journals. Our study confirms the results of previous research that showed high interest among physicians in the unique opportunities that electronic journals could offer, such as the ability to establish links with other areas of interest [9, 10].

Table 3

Barriers to the use of electronic publication features

Barriers	Family physicians (N = 110)	
	Number	Percent
Difficulty accessing an Internet provider		
Major	12	11
Minor	31	29
None	61	58
Inability to read the journal anywhere		
Major	30	28
Minor	54	51
None	21	20
Preference for print media		
Major	23	21
Minor	56	52
None	27	25

These findings could be used to guide the development of new offerings by electronic journals, especially general medical journals that are read by large numbers of family physicians.

Previous research has shown that physicians learn in response to specific clinical problems generated by patients in their daily practice [11]. This learning may explain the strong interest in links to an electronic medical text, a potentially convenient feature to answer clinically related questions. However, the low interest reported by family physicians in communicating with editors, authors, or other readers is of some concern. This position may somewhat reflect isolation of family physicians from colleagues that could ultimately influence their professional and personal development.

Inability to read an electronic journal anywhere (unless you own a personal digital assistant [PDA] with wireless capabilities) and preference for print media are felt to be barriers by the majority of respondents in both groups. A higher level of computer proficiency, however, is associated with a lower likelihood of reporting barriers. This suggests that improvement of physicians' computer literacy will lessen barriers to the use of online publication. This seems likely to occur considering that primary care physicians identify knowledge and skills about computers and informatics as an area for improvement [12]. However, until electronic technology can make computers just like print media, manufacturing handheld electronic devices with voice and handwriting recognition and a friendly reading interface, print journals may never be replaced. The ability to feel, touch, or simply turn over the pages of a journal in a true three-dimensional milieu is a feature that technology might not be able to match.

In our report, physicians also indicate high interest in links to an articles' list of references. The potential to immediately obtain not only the proper reference on a specific topic but also the full text of an article of interest is undoubtedly one of the most intriguing and exciting possibilities offered to medical journals by the digital revolution.

Some of the limitations of this study deserve consideration. First, respondents may have expressed an opinion about electronic features they have not yet used. However, most of the respondents report fairly high computer proficiency and Internet access. Second, responders may have been more interested than non-responders in using online journals. Responders, however, are fairly representative of physicians from one of the largest organizations of family physicians in the United States. Third, due to rapid changes in the publishing world and electronic technology, it is hard to predict how family physicians will respond to such an evolving environment. Thus, it will be important to continue to gather information about family physicians' information needs.

In the future, family physicians may have available at their fingertips a number of electronic features that will allow them to rapidly access a linked and customized system of medical information, using a wide variety of electronic devices. Family physicians may need to enhance their computer proficiency to take full advantage of new online features. Future research could focus on evaluating the actual use of new electronic features as they become available by tracking use of specific resources, time spent online, and types of articles read or printed.

Furthermore online journals are adding new features that will allow users to download automatically tables of contents and abstracts onto their PDA devices [13], which may help overcome some of the barriers to the use of online journals. The advent of new portable devices may also revolutionize the way in which we plan to assess medical information needs as personal computers and portable computers (laptop) may not be the only electronic means of such access. Primary care-oriented medical journals, in turn, should consider the specific interests of family physicians when implementing changes and offering new features.

REFERENCES

1. ANDERSON K, LUCEY JF. Pediatrics electronic pages: looking back and looking ahead. *Pediatrics* 1998 Jul;102(1 Pt 1):124-8.
2. FAXON DP. AHA journals lead with definitive new online site. *Circulation* 1998 Sep 15;98(11):1047.
3. DELAMOTHE T, SMITH R. The BMJ's Website scales up. *BMJ* 1998 Apr 11;316(7138):1109-10.
4. ANDERSON K. A journal-publishing hybrid: creating electronic pages for pediatrics. *J Scholarly Publ* 1997 Oct;29(1):21-35.
5. CAMPION EW, ANDERSON KR, DRAZEN JM. A new Web site and a new policy. *N Engl J Med* 2001 May 31;344(22):1710-1.
6. AMERICAN ACADEMY OF FAMILY PHYSICIANS. Facts about AAFP. [Web document]. Leawood, KS: The Academy. [cited 10 Dec 2002]. <<http://www.aafp.org/gov/>>.
7. TORRE DM, WRIGHT SM, WILSON RF, DIENER-WEST M, BASS EB. What do academic primary care physicians want in an electronic journal? *J Gen Intern Med* 2003 Mar;18(3):209-12.
8. AMERICAN ACADEMY OF FAMILY PHYSICIANS. AAFP membership report [personal communication]. Leawood, KS: The Academy, Nov 2001.
9. WRIGHT SM, TSENG WT, KOLODNER K. Physicians opinion about electronic publications. *Am J Med* 2001 Apr 1;110(5):373-7.
10. TORRE, op. cit.
11. SLOTNICK HB. Physicians' learning strategies. *Chest* 2000 Aug;118(2 Suppl):18S-23S.
12. MCCLARAN J, SNELL L, DUARTE-FRANCO E. Continuing educational needs in computers and informatics. McGill survey of family physicians. *Can Fam Physician* 2000 Apr;46(4):839-47.
13. CAMPION EW, ANDERSON K, DRAZEN JM. Advances in our electronic pages. *N Engl J Med* 2002 Jan 31;346(5):362.

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